Abstract

"Method for Forming a Modified Semiconductor having a Plurality of Band Gaps"

A method for forming a modified semiconductor having a number of band gaps. The first step involves providing a semiconductor having a surface and a quantum region which emits photons in response to electrical or optical stimulation, the quantum region having an original band gap and being disposed under the surface. The next step involves applying a number of layers of a number of materials to a number of selected regions of the surface, the materials being adapted to cause, upon thermal annealing, a number of different degrees of intermixing in a number of portions of the quantum region disposed immediately below each of the selected regions of the surface. The layers of materials can be applied in a dot or line pattern, or both, to increase the plurality of band gap tuning. The next step involves thermally annealing the layers to the surface such that the layers cause a number of degrees of intermixing in the different portions of said quantum region thereby shifting the original band gaps of those portions. These steps result in a modified semiconductor which exhibits a number of different band gaps in a number of portions of the quantum region depending upon the positioning of the layers of materials on the surface immediately above the respective portions of the quantum region.

[Figure 6F]